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ABSTRACT

High schools in Australia are increasingly expected to be effective in holding students at school to year 12 as well as in promoting achievement. Analysis of quantitative data gathered as part of a longitudinal study of 22 New South Wales (Australia) schools shows that schools differ in their holding power as well as in the achievement levels of their students. Differences remain (although the magnitude is reduced) when allowance is made for student background and the outcomes of the earlier years of secondary school. Information about students' attitudes to school and qualitative information from these schools about curriculum and organization indicate the sources of some of the observed differences between schools. Key elements of the paper concern the measures of school holding power, achievement, attitudes to school, and student background. The methodology is detailed and data is presented in tabular and graphical forms. (17 references) (Author/RR)

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EFFECTIVENESS OF HIGH SCHOOLS IN AUSTRALIA: HOLDING POWER AND ACHIEVEMENT

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High schools in Australia are increasingly expected to be effective in holding students at school to Year 12 as well as in promoting achievement. Analysis of quantitative data gathered as part of a longitudinal study of 22 schools shows that schools differ in their holding power as well as in the achievement levels of their students. Differences remain (although the magnitude is reduced) when allowance is made for student background and the outcomes of the earlier years of secondary school. Information about students' attitudes to school and qualitative information from these schools about curriculum and organisation indicates the sources of some of the observed differences between schools.

A major policy focus of Australian education over the past decade has been the proportion of young people completing a full secondary education. In general students may leave school on reaching 15 years of age. This usually occurs in Year 10. In some states, such as New South Wales, completion of Year 10 entitles students to a certificate signifying completion of the junior secondary cycle. To complete the full secondary cycle students proceed voluntarily to Years 11 and 12, the senior secondary years. At the beginning of the 1980s the percentage of each cohort who completed a full secondary education was considered to be low relative to many comparable countries (Karmel 1981). That is no longer the situation. During the 1980s there was a dramatic increase in the percentage of young people remaining to the final year (Year 12) of secondary school in Australia. In 1981 only 35 per cent of each cohort reached Year 12 but by 1990 the figure had grown to 64 per cent (Ainley & McKenzie 1991). Secondary school completion rates for Australia as a whole are now approaching those of North America (Rumberger 1987).

Within this general pattern there remain differences in secondary school completion rates among schools, and among education systems, with considerable interest in why some schools hold more of their students to the senior secondary years than others. It is widely acknowledged that completion of secondary school is associated with

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various aspects of social background (Rumberger 1983; Coombs & Cooley 1986; Ainley & McKenzie 1991). In addition there is evidence from several countries that differences in school completion rates may also be a result of differences in school policy and practice (King, Warren & Coles 1980; Ainley, Batten & Miller 1984a; Wehlage & Rutter 1986; Lawton & Leithwood 1988; Bryk & Thum 1989; Ainley, Foreman & Sheret 1992). However, in these studies of school holding power there are conflicting views regarding which school factors best encourage students to remain at school. Some studies suggest that stronger holding power is fostered by factors similar to those which are linked to student achievement; strong academic emphasis, coherent program, limited choice of studies (Lawton & Leithwood 1988; Bryk & Thum 1989). Other studies suggest that the presence of innovative programs, which address the needs of potential dropouts, is associated with greater holding power (Ainley Batten & Miller 1984b; Wehlage & Rutter 1986; Batten 1989). It seems possible that many of these differences arise because of contextual difference in whether staying on or dropping out is the most common form of behaviour and in the scope for offering alternative programs with academic status. Within this framework it is possible that there is a linking factor of participation and identification which can be generated within different types of program (King 1980; Finn 1989).

Deliberations about whether similar or different factors contribute to holding power and student learning are also present in the debate about whether schools can be simultaneously effective in promoting both achievement and holding power; a variation of disputes about whether "more means worse". On the basis of the proposition advanced by Finn (1989) building positive attitudes to school through participation and identification ought to have benefits for both holding power and student learning. The present paper examines school effectiveness in terms of both holding power and achievement.

METHODOLOGY

Both quantitative and qualitative information are used in the present paper to examine school effectiveness in terms of holding power, student learning and attitudes to school. A variety of measures and statistical techniques are used to identify schools which appear to be effective on one or more of these criteria and, then, multisite qualitative research methods (Herriott & Firestone 1983) are applied to an examination of features of school policy and practice in those schools.

Data for the paper are derived from a longitudinal study of students from 22 high schools in one Australian state (New South Wales). Students who were in Year 9 in 1987 were followed each year through to Year 12 in 1990 and beyond school. Information was obtained about student background achievement, attitudes to school, approaches to learning, subjects studied and career plans. There were some 2600 students for whom information was available in both Year 9 and Year 10 and for whom post-Year 10 destinations were available (there were initially 3000 students in Year 9). Consistent with the general pattern of school participation, half of those left school before Year 12. Of the 1300 potential respondents from Year 12, just over 1,000 completed the survey in their final school year. Most data were obtained from

self-report questionnaires with interviews being held with sub-samples of students in Years 10 and 11. In addition information was obtained from parents, teachers and key staff members in each school about its organisation and programs. A full description of the study, its methodology and results, is being reported elsewhere (Ainley & Sheret in press). Key elements for the present paper concern the measures of school holding power, achievement, attitudes to school, and student background.

Holding Power and Retentivity

The term "Holding Power" is used to distinguish the underlying concept (the propensity of students at a school to remain to the postcompulsory years) from those measures commonly used as indicators: retention rates, drop-out rates, progression rates, and participation rates. The question addressed in this paper is whether schools differ in their holding power, beyond the effect of transfers and the background characteristics of their students. The analyses focus on two transitions; the progression from Year 10 to Year 11, and the progression from Year 10 to Year 12. The transition from Year 10 to Year 11 is the key transition point between the compulsory and postcompulsory years of schooling in New South Wales. However, Year 12 is the final year of secondary school and it is important to give attention to factors associated with attaining that level. The percentage of students making each transition in any school is described as the "progression rate". Holding power is measured in terms of "apparent progression rates", "internal progression rates", and "adjusted progression rates".

Apparent progression rates. Apparent progression rates refer to the ratio of enrolment levels in one Year level to those in a corresponding Year level from an earlier time (eg. Year 12 in 1990 to Year 10 in 1988). The distribution of apparent retention rates to Year 11 (in 1989) for all New South Wales government high schools shows an interquartile range of 26 percentage points (from 51 to 77 per cent) and that for Year 12 (in 1990) had an interquartile range of 24 percentage points (from 38 to 62 per cent). The question remains as to the extent to which those differences arise from transfers, social context or school policy and practice.

Internal progression rates. Transfers inflate the apparent retention rates of some schools beyond their holding power in relation to their own students. Indeed a few schools have apparent retention rates in excess of 100 per cent. To overcome this problem "internal progression rates" were invoked and calculated. An "internal" progression rate is the percentage of Year 10 students in a school who continue to Year 11, or Year 12 in the same school. In the present study "internal" progression rates were calculated from class lists of student names supplied by the schools. Even though these do not include students who transfer from that school to another school they provide a better estimate of the holding power of each school than the apparent retention rates. In fact there was a good correspondence between the internal progression rates calculated from our data and the apparent progression rates calculated from official data; the correlation coefficients being 0.84 and 0.90 respectively.

Adjusted progression rates. Adjusted progression rates indicate what those internal progression rates would be if the schools were alike in various characteristics of their student populations. Adjustments are made for social and economic background and for mediating factors such as earlier school achievement and attitudes to school. Such data allow an examination of whether membership (ie. which school is attended) contributes to staying at school to Year 11, or Year 12, beyond what would be predicted on the basis of the characteristics of the students. These data were derived from the results of regression analyses in which school membership (represented as a set of dummy variables) was included as a predictor along with variables capturing student background and the outcomes of earlier schooling (Ainley, Foreman & Sheret 1992). It should be noted that the residuals (on which the adjusted progression rates are based) are the error terms (or the unexplained component of the variance) and are not always precise stable estimates. Inferences drawn from the data should therefore be based only large differences. In the present analyses two levels of adjustment are made: adjustment for student background (gender, socioeconomic background, ethnic background and parents expectations) only (level 1), and adjustment for student background plus mediating variables (earlier school achievement, views of school life, and self-rated achievement) (level 2).

Achievement

Information about student achievement is pivotal to an understanding of the progress of students through senior secondary school both because it indicates the extent to which learning has occurred and because earlier school achievement is an important influence on whether a student stays to complete their secondary education. The study used a number of different tests to monitor selected aspects of student learning. Some of the tests were administered as part of the data gathering procedures for the study and others were tests which students routinely completed in Year 10 and Year 12 and for which results were made available to the study. From these tests it was possible to construct measures of end-of-school achievement, earlier school achievement, and achievement growth.

End of School Achievement. In the senior secondary school, where students study different subjects, it is hard to find an achievement measure which allows a valid comparison of achievement among students. However, almost all Year 12 students sit for public examinations in their Higher School Certificate subjects. The results of these examinations are combined with school assessment data to form an assessment in the subject. The subject assessments are then aggregated using an iterative procedure to produce an overall score which is expressed as a percentile rank. These assessments are "high stakes" for students in that they are used as a basis for selection into courses of higher education and in many cases for employment. For the students in our study both the individual subject assessments and the aggregate were available. The present paper utilizes the aggregate measure.

Earlier school achievement. Earlier school achievement was measured using four achievement tests, covering aspects of mathematics and English, administered in Year 9 (specific to the study) and Year 10 (curriculum related tests taken routinely by students). The test scores were summarized in a composite formed by combining the standardized scores on each test. This procedure meant that a measure of earlier school achievement was available even if the student did not attempt all four tests. Since each individual test has an established high reliability the composite is extremely reliable (Ainley & Sheret in press).

Achievement growth. Achievement growth is studied through the residuals obtained from a regression of the aggregate Year 12 assessment on the composite achievement measure obtained from tests administered when students were n Years 9 and 10. A positive residual indicates that a student achieved a higher score than would have been predicted on the basis of earlier school achievement and a negative residual indicates lower than predicted achievement. Differences between school means on this measure provide a method of identifying schools where final achievement scores are greater than would have been expected on the basis of earlier performance.

Attitudes to School

In terms of students' attitudes to school it is not argued simply that students should be "happy" but they should experience a sense of accomplishment, purpose, and identification with school. Information about students' views of school life is therefore important to the study of effectiveness in the senior secondary years. The approach used in this study sees the relevant aspects of school life as comprising general feelings of well being (positive affect), general negative feelings (negative affect or anxiety), and feelings related to five specific domains of school life: teacher-student relations, status in the school, social integration, sense of success, and a sense of relevance in school work. The questionnaire used to assess attitudes to school was the ACER School Life questionnaire which is grounded in a view of societal expectations of schooling and has been developed and tested over several years (Batten and Girling- Butcher 1981; Williams and Batten 1981; Ainley, Miller & Reed 1986). It consists of 40 statements about school to which students are asked to indicate their level of agreement on a self-report Likert scale. The model does not envisage the domains as being independent of each other but that together they constitute a view of the elements of school life for students. These attitudes to school were measured at Years 9, 11, and 12, and in terms of changes over the period from Year 9 (1987) to Year 12 (1990).

Academic Self-concept.

Academic self-concept refers to students' views of their capacity to cope with school work in relation to their peers. Students may define their capacity differently in different fields of study. In keeping with literature which distinguishes verbal and mathematical academic self-concept, information is needed about students' assessments of how well they are doing in English, mathematics, and school work in

general. In Years 9, 10, and 11, students were asked to indicate "compared with most of the students in your Year level at school, how well are you doing in"; English, Mathematics, and "your school subjects overall". Results supported the view that students distinguish their ratings in English and mathematics but also indicated that a global self-rated achievement could be formed by a combination of each of the six ratings over Years 9 and 10. Self-rated achievement added additional information beyond that provided by measured achievement scores.

Student Background

Background factors important to school attainment (years of completed schooling) which were included in the analysis were gender, socioeconomic status, and non-English-speaking background. Other research suggested that the influence of these factors on attainment was, at least in part, attributable to the educational expectations held by parents and others. For that reason information from students about what they saw as the expectations held for them by parents was also included in the analysis. Information about each was obtained from self-report questionnaires.

Gender is self explanatory and was coded as 1 for males and 2 for females. The other variables require a little explanation. Socioeconomic status was based on the stated occupation of the respondent's parents coded on the 6 point ANU scale of prestige (Broom et al, 1977). Non-English speaking background (NESB) was based on the place of birth of the students and their parents: neither parent born in a non-English speaking country (65%) coded as 1, one parent only was born in a non- English speaking country (8%) coded as 2, both parents born in a non-English speaking country (17%) coded as 3, and where the student was born in a non-English speaking country (10%) coded as 4. Parental expectations were based on students' reports of the extent to which they thought that their parents wanted them to continue study when they left school. Students who indicated work without any form of study were assigned a score of 1, those who indicated that they did not know their parents' expectations were assigned a score of 2, those who indicated part-time study were assigned a score of 3, and those who indicated full-time study were assigned a score of 4.

SCHOOL HOLDING POWER: YEAR 11

Data relevant to a consideration of the holding power of particular schools to Year 11 are shown in Table 1, expressed as deviations in percentage points from the overall mean. A positive value indicates a higher, and a negative value indicates a lower, than average progression rate. The first two columns record the apparent progression rates and the (unadjusted) internal progression rates. The remaining columns indicate what the internal progression rates would be after each level of adjustment. An examination of the pattern of these data indicates the ways in which schools differ in their holding power.

Table 1 Progression Rates for the Transition from Year 10 to Year 11 in Selected NSW High Schools.

School	Progression Rates		Adjusted Progression Rates				
	Apparent rate	Internal rate	Level 1	Level 2A	Level 2B	Level 2C	Level 2ABC
A	+30	+15	+9	+8	+12	+12	+9
B	+6	-1	-6	-1	-4	-4	0
C	-6	-8	-2	-6	-2	-2	-4
D	-8	-8	-12	-13	-10	-10	-10
E	-8	-8	-1	+1	-1	-1	0
F	+10	+13	+7	+9	+7	+7	+8
G	+8	+9	+2	+9	-1	-1	+5
H	-14	-3	-1	-3	-1	-1	-3
I	-5	-8	+2	+7	0	0	+5
J	-7	-2	-4	-5	-8	-8	-7
K	+3	-2	+3	+1	+1	+2	+1
M	+13	+13	+11	+3	+11	+11	+6
N	-12	-11	-8	-6	-8	-8	-7
O	-10	-3	0	+1	0	0	0
P	+5	+9	+13	+10	+13	+13	+10
Q	+17	+5	+1	+2	+4	+4	+4
R	+9	+5	+2	-6	+1	+1	-5
S	+8	+2	+5	+2	+5	+5	+2
T	+8	+6	-3	+1	-3	-3	-1
U	-20	-15	-10	+1	-8	-8	-1
V	-12	-2	0	+1	+1	+1	+1
W	-6	-3	-2	-3	-5	-5	-5

Note: Internal progression rates (column 2) use cohort data only. If complete class lists were used there would be some slight adjustments to these internal progression rates.

a Deviations from the grand mean in percentage points.

b The ratio of official Year 11 enrolments for 1989 to Year 10 enrolments for 1988. Year 11 enrolments include net transfers.

c The percentage of Year 10 students from the schools in 1988 who were in Year 11 in 1989.

d Level 1 adjustments make statistical allowance for difference in background characteristics of students.

e Level 2A adjustments make statistical allowance for differences in background and achievement.

f Level 2B adjustments make statistical allowance for differences in background and views of school life.

g Level 2C adjustments make statistical allowance for differences in background and self ratings of achievement.

h Level 2ABC adjustments make statistical allowance for differences in background, achievement, views of school life, and self-rated achievement.

The Role of Transfers

The largest discrepancy between the apparent and internal progression rates was observed for School A. Other information from the school indicated a large number of transfers to School A at Year 11 level and was thus consistent with these data. It is a long-established suburban school with a strong science and technology orientation. It also had a higher than average internal progression rate which remained high after adjusting for background and mediating variables. Data for School S showed an apparent progression rates to Year 11 (and also Year 12) which were higher than internal progression rates. School S conducts some specialist programs and transfers to the school are probably related to those programs. School Q also showed an apparent progression rate somewhat higher than its internal progression rate to Year 11. It was a suburban school in an area of higher than average socioeconomic status. Its internal progression rate was a little above average, but only about what would have been expected on the basis of the background of its students. There was no special orientation to its senior school programs.

School Differences

As a generalisation school membership did not contribute as much to progression to Year 11 as other factors. In fact school membership contributed about two per cent of the variance in progression to Year 11 beyond background factors. However, there were still some substantial differences among schools in the sample. Examination of internal progression rates in Table 1 shows that schools differ in their holding power even if there is no complication from transfers. The difference between the highest and lowest internal progression rates was some 30 percentage points.

Allowing for Background Factors

As shown in Table 1, School E has a below average internal progression rate to Year 11 but when allowance is made for the characteristics of its students that rate is what would be expected for the school. It is a country school where the students are of relatively low socioeconomic background and very few students are of non-English speaking background. School T appears to have a higher than average progression rate to Year 11 but when allowance is made for the characteristics of its student population it emerges that its holding power is only what would be expected. It is an inner urban school with a high percentage of students from non-English-speaking backgrounds. After allowing for the background of students there remained substantial differences between schools in their holding power. The range between the highest (School P) and lowest (School D) values for the adjusted progression rates (level 1) was some 25 percentage points.

Schools With Higher than Expected Progression Rates

School P and School M stood out as retaining more students than would be expected on the basis of their populations. In each of these two schools the adjusted progression rate (level 1) was more than 10 percentage points above the grand mean. In this section some of the main features of Schools P and M which appear to relate to their higher than expected progression rates are outlined.

School P. School P had a progression rate substantially higher than expected on the basis of its social context. Its progression rate remained at this higher than expected level after allowance for the outcomes of earlier schooling. It can be inferred that this school did something which encouraged retention, other than having high achievement and developing favourable attitudes to school in Years 9 and 10. Two interesting features of School P were regarded by staff as keys to understanding its unusually high progression rate. One was the provision of innovative programs to address the different needs of students in Years 11 and 12. This included an alternative (or "non-academic") senior school program which was time-tabled separately, involved a coherent curriculum, included large amounts of work experience, and was geared towards providing employment skills. It was not regarded by the school as a fringe program but one which was important to its mission. The other was its "staying on" program that targeted students in Years 9 and 10 to make them aware of their post-Year 10 options in technical and vocational training institutions, in work and at school. It can be noted that School F, which also had a higher than expected progression rate to Year 11, had some similarities to School P in that it provided alternatives to the traditional senior school program (especially in the area of commercial and computer studies) within an orderly supportive environment. As a single sex metropolitan school, School F operated in a different social context to School P, which was a coeducational school in a large country town, but the impact of these types of program was similar.

School M. Even though School M retained more students to Year 11 than would have been expected from its social composition, when allowance was made for earlier school achievement in conjunction with student background its adjusted progression rate was only slightly higher than average. In contrast, when allowance was made for attitudes to school in conjunction with student background, it became the school with the highest holding power. School M was notable for the high achievement levels, and the comparatively unfavourable views of school of its students. It appeared that School M enjoyed high retention rates because of its high levels of earlier student achievement. School staff indicated that, while innovative courses were accepted, the school concentrated on a stable, traditional, academic curriculum. Curriculum decisions were seen to be driven by student and community demands, which put emphasis on university entrance. Many years ago the school had been a selective school and the Principal considered that the community still considered the school in those terms.

Schools With Lower Than Expected Progression Rates

School D and School U were the two schools for which progression from Year 10 to Year 11 were furthest below the value that would have been expected on the basis of the background of their students. In considering those two schools in detail an interesting patchwork of influences emerges.

School D. The unadjusted internal progression rate for School D was well below the overall mean. It had a very low progression rate in relation to the background of its students and when allowance was made for all background and mediating influences it stood out as having the lowest holding power in the sample. It was a single-sex high school in a suburban location but its low holding power is not necessarily attributable to its single-sex status. School F (see above) was also a suburban single-sex high school (the same sex composition as School D) and it showed a higher than average, and higher than expected, progression rate. The distinctive features of School D were the students' attitudes to school and their aspirations for continued education. When they were in Year 9, during 1987, students from School D recorded very low scores on the school life questionnaire (0.4 of a standard deviation lower than the overall mean) and a similar result was found among the Year 10 students of 1987 from School D (which suggests that the result was not confined to one cohort). School D students were especially low on the attitude scale designated as "achievement" which referred to feeling successful in their school work. A lower than average percentage of Year 9 students planned to continue with school. In interviews conducted during Year 10, students from School D commented on what they saw as a restricted curriculum and the rigidity of school rules.

School U. School U had the lowest unadjusted internal progression rate of the sample. Adjustment for student background characteristics reduced the margin considerably. Additional adjustment for earlier school achievement showed that the progression rate in school U was about what would be expected for its social composition and levels of school achievement in Years 9 and 10. It had the lowest levels of achievement in Years 9 and 10 of all the schools in the study (the mean achievement score on our composite measure was 0.7 standard deviation units below the overall mean). Attitudes to school scores were about average. School U was an outer suburban co-educational high school in a poor socioeconomic area but with fewer than average students of non-English-speaking background. A high percentage (60 per cent) of the students came from single parent families; many were on welfare. Students reported lower than average levels of parental expectations that they would continue their education after leaving school. The physical resources at School U were not good and there was a high turnover of staff with many being in their first year of teaching. Even head teachers tended to be new in that position. There was some divisiveness among the staff. During the period of the study a new principal and deputy had resulted in a more directive style of school leadership; a change which had varying degrees of support from the teaching staff. The curriculum at School U had been traditional but there was evidence of recent innovations in some subjects (eg. mixed ability teaching, a Year 12 graduation ceremony, and several special activities such as a "staying on" program.

In Summary

In terms of progressing from Year 10 to Year 11 there were differences between schools with higher than expected, and lower than expected holding power. The two schools with better than expected holding power had achieved this in different ways. In one case the influence could be attributed to the high achievement levels of its students in the middle secondary years. In the other case the key to holding power seemed to be an alternative to the regular academic program; an alternative which was coherent and integrated in itself and strongly supported by the school. The two schools which had lower holding power than expected each had problems identified in the lower secondary years. In one the problem seemed to be low levels of achievement which appeared to partly linked to various aspects of school organisation in its recent past. A solution to its low holding power would need to involve an attempt to raise the achievement levels of its students. In the other low holding power appeared to be linked to unfavourable attitudes to school and low aspirations.

SCHOOL HOLDING POWER: YEAR 12

Approximately 25 per cent of students who reach Year 11 do not proceed to Year 12, the final year of secondary school. For that reason the pattern observed for Year 11 would not necessarily be expected to be replicated at Year 12. Indeed, there were some differences observed in terms of progression to Year 12 compared to the picture for Year 11. Data relevant to the progression from Year 10 to Year 12 are shown in Table 2. School P had been identified as having a rather higher than expected progression rate to Year 11. In the Year 12 picture it is about average in terms of its social composition. It will be recalled that School P achieved a high progression rate by offering a well-supported, coherent alternative to the mainstream academic program. Given that students in the alternative course were encouraged and assisted to find employment at any time during Years 11 and 12, it is not surprising that its strong holding power to this level did not carry through to Year 12. The course was not designed with that as a primary goal. However, it is worth noting that its holding power to Year 12 was about average for its student population. It had not lost anything, in terms of participation in the traditional program, through offering a well-supported alternative. Schools D and U, which were well below expectation in the Year 11 data do not have such a large deficit in the Year 12 data. This indicates that students who reached Year 11 in those schools continued to Year 12. In other words the problem at Year 11 was one of attracting students who were not fully committed. Those who were committed stayed to Year 11, and then continued to Year 12, in spite of the fact that many of their peers had withdrawn before Year 11.

Table 2 Progression Rates for the Transition from Year 10 to Year 12 in Selected NSW High Schools

School	Progression Rates		Adjusted Progression Rates				
	Apparent rate	Internal rate	Level 1	Level 2A	Level 2B	Level 2C	Level 2ABC
A	+33	+20	+13	+11	+13	+17	+14
B	+16	+7	+2	+8	+4	+4	+9
C	-2	-3	+4	-2	+6	+3	0
D	-3	+2	-4	-6	-1	-2	-3
E	-10	-1	+11	+12	+10	+10	+12
F	+10	+5	-3	+1	-3	-2	0
G	+5	+3	-6	+4	-9	-10	-1
H	-14	-13	-8	-10	-8	-7	-9
I	-15	-15	-4	+5	-5	-5	+2
J	-13	-7	-9	-10	-10	-13	-12
K	+7	+9	+14	+11	+13	+11	+10
M	+15	+16	+13	+3	+15	+15	+7
N	-15	-13	-9	-6	-10	-9	-7
O	-12	-8	-4	-3	-4	-5	-4
P	-8	-3	+1	-2	0	+2	-2
Q	+17	+9	+6	+8	+7	+10	+10
R	+10	+14	+10	-1	+9	+9	0
S	+13	0	+3	-2	+2	+2	-3
T	+10	+8	-1	+5	-3	-1	+3
U	-21	-11	-5	+8	-5	-5	+5
V	-12	-8	-7	-5	-7	-6	-5
W	-6	-2	0	-1	-2	-4	-4

Note:

Internal progression rates (column 2) use cohort data only. If complete class lists were used there would be some slight adjustments to these internal progression rates.

a Deviations from the grand mean in percentage points.

b The ratio of official Year 12 enrolments for 1990 to Year 10 enrolments for 1988. Year 11 enrolments include net transfers

c The percentage of Year 10 students from the schools in 1988 who were in Year 12 in 1990.

d Level 1 adjustments make statistical allowance for difference in background characteristics of students.

e Level 2A adjustments make statistical allowance for differences in background and achievement.

f Level 2B adjustments make statistical allowance for differences in background and views of school life.

g Level 2C adjustments make statistical allowance for differences in background and self ratings of achievement.

h Level 2ABC adjustments make statistical allowance for differences in background, achievement, views of school life, and self-rated achievement.

Schools With Higher Than Expected Progression Rates

Several schools in the sample had progression rates to Year 12 which were higher than would have been expected from the social composition of their student populations: Schools K, M, A, and R.

Schools M and R. School M has been discussed in the previous section in terms of its Year 11 pattern. As in that instance the pattern suggests its strong holding power is associated with high levels of achievement in the middle secondary years. A similar picture applies to School R which, like School M, had high levels of achievement in those years. Unlike School M it did not have notably unfavourable student attitudes to school in those earlier years. School R differed from School M in drawing its students from a relatively high socioeconomic suburban area. However, it was similar to school M in that staff expected students to achieve high standards and to attain high levels of education.

School A. School A was a school with strong science and technology orientation which attracted a large number of new students to the school for Years 11 and 12. It also retained a significant number of its own students to both Years 11 and 12. It publicised itself as a school with a strong record of achievement in the senior years. This both served to attract new students and possibly created a climate which encourages its own students to remain at school.

School K. School K was the school with highest adjusted retention rate and is possibly the most interesting. It was also a school with high levels of achievement where students expressed favourable attitudes to school. School K is a small country school with a culturally homogeneous population, but its holding power far exceeds that of other small country schools. Key features contributing to its performance appeared be its climate and its approach to curriculum and teaching. Staff and students commented on positive features of the school climate including the "students first" philosophy emanating from the principal, the good communication among staff and between staff and the principal, teacher-student rapport, and community support. The Principal's own view of his role is to "make school work for students" by setting the philosophy and tone of the school, overseeing the curriculum and providing staff support and development. According to the careers adviser students enjoy the school and many regard it as a centre of social life. That view was corroborated in interviews with a group of students from Year 11 in 1990. All were happy with their decision to return to school and identified the most positive features of the school as its smallness and the interpersonal relationships that developed from knowing people over time. The curriculum was described by staff as traditional with some innovation. However, an earlier period of review and rethinking (just before the project began the school had extensively rethought its curriculum and experimented with innovations such as cyclic timetabling, semesterisation, and alternative courses in the senior year) probably had residual benefits for the school. Within the traditional course content and organisation there was a stated emphasis on teachers being expected to get students to think about learning processes. These expectations, as expressed in interviews, were consistent with what was observed during visits to classes in action (eg. in science projects concerned with electricity and the use of real life experiences

and 'what if' questions in mathematics). The school had a wide curriculum for its size and the parents who were interviewed were happy with the curriculum choice offered at the school and did not feel disadvantaged being a country school.

Schools with Lower Than Expected Progression Rates

There were four schools, which after adjusting for student background had lower than expected progression rates to Year 12: schools H, J, N, and V. These schools also remained below average after adjusting for the outcomes of earlier schooling. The common characteristic of these schools arising from qualitative observations was that they were not doing much that was special. They followed what was required of them without providing much interest for students or much sense of being in control of what they did. It could be said that they administered what was required rather than interpreting or even challenging those requirements. Student aspirations tended to be low. In School V there was evidence that senior staff were preoccupied with discipline problems.

School U was interesting in that it had an apparent progression rate to Year 12 which was well below the overall mean, indeed the lowest in the sample. Its internal progression rate was also well below average. Adjusting for social background reduced that deficit somewhat. The further adjustment for earlier school achievement showed that, given the low level of achievement its students School U actually held more than would be expected into Year 12. In the preceding section School U was described in some detail. For holding students to Year 12, as was the case for holding them to Year 11, the key at School U appeared to lie firmly in earlier school achievement.

In Summary

Patterns of holding power to Year 12 were not necessarily identical with those to Year 11. Some schools successfully retained students to Year 11 but not necessarily to Year 12. Schools which stood out at Year 11 had often made an attempt to provide more broadly for their students through a wider range of courses. These do not seem to flow on to Year 12 because there are not such opportunities for more broadly based courses with recognition at that level. In other schools a high percentage of those who stayed to Year 11 continued to Year 12. Those schools had often promoted high achievement in the earlier years and encouraged students to believe that completing secondary school was a desirable attainment. This applied as much to a small country school as to traditional high schools in the metropolitan area. Overall the evidence suggests that schools can influence staying on to the postcompulsory years through what is offered in those years as well as what is done in the earlier years of school.

ACHIEVEMENT AND ACHIEVEMENT GROWTH

First and foremost schools are about learning. Such a view does not preclude a broadly conceived view of learning which incorporates the full range of student development but it does emphasize that a consideration of effectiveness among schools has to incorporate some evaluation of the extent to which learning is promoted. Typically learning is assessed through tests of student achievement but it needs to be remembered that data from those tests represent imperfect indications of the extent to which learning has occurred. Moreover to assess student learning measures taken over at least two points in time are needed. The present paper incorporates in its view of effectiveness among schools in the senior secondary years measures of both achievement and achievement growth.

As indicated previously in the paper, end of school achievement was measured through aggregate scores on the end of school public assessments used for selection into higher education. Those assessments are based on a combination of formal examinations and teacher assessments of other tasks, closely related to the curriculum followed by students in each of their subjects. Assessments from individual subjects were combined to form an overall aggregate in a way which reflects differences among the students studying each subject. Those end of school assessments were then used to create a scale of achievement growth, defined as the extent to which students do better or worse than would be predicted from their earlier school achievement measures.

School Differences in Achievement

As shown by data in Table 3 there are clearly differences among schools in the end of secondary school overall achievement of their students (as reflected in the aggregate tertiary entrance score formed from the assessments in individual subjects). The mean scores range from 27.5 (School U) to 61.7 (School K) with an overall mean of 45.9. Features of these schools have been described previously in the present paper. There are several ways of expressing the variation in school means shown in Table 3. The value of the statistic "eta-squared", shown in Table 3, indicates that the percentage of variance in unadjusted scores attributable to the between school differences was 11 per cent. This corresponds to a correlation coefficient of 0.33 and represents an indication of substantial differences among schools, even though there are greater differences within schools than between them.

Achievement Growth

The overwhelmingly strongest predictor of end of school achievement is earlier school achievement (r=0.71). However, achievement growth, as defined previously in this paper, has associations with other variables; associations which are absent or different if achievement alone is used as the criterion. Among students, achievement growth is positively associated with the use of a deep approach to learning, favourable

Table 3 School Differences in End-of-school Achievement and Achievement Growth

School	End-of School Achievement	Achievement Growth
A	52.8	4.9
B	39.6	4.7
C	54.1	-2.5
D	57.2	5.7
E	34.8	-7.3
F	46.0	4.8
G	34.2	1.4
H	46.6	-6.7
I	34.6	0.6
J	39.8	-2.9
K	61.8	12.5
M	58.5	2.2
N	44.5	-1.2
O	36.4	-7.8
P	56.7	-0.3
Q	45.9	0.6
R	59.7	-3.4
S	41.5	-5.2
T	42.3	2.8
U	27.6	-1.6
V	42.7	-6.0
W	33.7	-9.4
Mean	45.9	-0.7
Eta-squared	0.112	0.064

Note: End-of-school achievement is based on percentiles formed by aggregating final assessments in each subject studied by the students.

Achievement growth is based on the residuals from a regression of end-of-school achievement against a composite measure of earlier school achievment.

attitudes to aspects of school, and some specialisation in the combination of subjects which they studied.

Approaches to Learning. Achievement growth is linked to adopting deep approaches to learning (r=0.19) but there is no significant association between achievement growth and the use of surface approaches to learning. An inference to be drawn is that students who adopt deeper approaches to learning have larger achievement gains in the senior secondary years; contrary to the view that students should cram for their final examinations. It would appear that students are better served by being helped and encouraged to integrate their learning and build structures of meaning than to concentrate entirely on rote learning. It can be noted that qualitative evidence from School K suggested that deep approaches to learning were encouraged at that school.

Attitudes to School. There are modest, but statistically significant associations between attitudes to school and achievement growth. The strongest associations are with the achievement (feeling successful) subscale (r=0.29), teacher student relations (r=0.21), general satisfaction (r=0.19), and opportunity (sense of relevance) (r=0.15). Even though there is almost no association between most of the school attitudes scales and achievement there are important associations with achievement growth. Promoting a positive view of school life, in those areas more closely related to the learning process, is associated with growth in achievement.

Student Background. There is no significant association between achievement growth and gender (r=.02) or socioeconomic background (r=.07). Positive associations are found with both non-English-speaking background (r=0.22) and parental expectations for continued education (r=0.17).

Specialization. Achievement growth is greater for students in science-oriented courses than their peers from humanities courses, who in turn do better than those in mixed course types. One possible inference to be drawn from these data is that studying subjects which relate to and reinforce each other is of benefit in terms of student learning.

School Differences in Achievement Growth

Inspection of the pattern among the 22 schools shows that many of the differences in average achievement reflect those which existed in earlier school achievement. This is to be expected, given the strong correlation between earlier school achievement and end of school achievement. However, significant differences among schools remain in achievement growth even though those differences are much less marked. The percentage of variance in achievement growth attributable to the between school differences was just six per cent (a figure which corresponds to a correlation coefficient of 0.25) compared with 11 per cent for the unadjusted scores. The inference which can be drawn from these data is that even though most of the differences among schools in achievement derive from earlier achievement levels there remains evidence of school effects on students learning through the senior secondary years.

Holding Power and Achievement

There is no evidence in these data to support the proposition that retaining a high proportion of students to Year 12 militates against the development of high levels of achievement. In fact for both unadjusted achievement, and for achievement growth, there is a tendency for higher achievement and high progression rates to be associated. The correlation coefficient between the internal progression rate from Year 10 to Year 12 and mean achievement was 0.54. In other words schools with high progression rates to Year 12 tended to have higher mean levels of achievement. The association is illustrated in Figure 1. On this basis schools A, M, R, and Q would be considered to be effective on both criteria and schools U, N, and O would be considered ineffective on both criteria. Of course these measures of effectiveness take no account of the social background or the outcomes of earlier schooling. To examine what schools have contributed over the senior secondary years it is necessary to consider various adjusted measures.

Figure 2 shows the pattern of association between progression rates adjusted for student background (ie. level 1) and achievement growth. The correlation coefficient of 0.31 between these two measures is a little lower than that between achievement and the unadjusted progression rate. However this measure of association is inflated by the data for school K which has both a high adjusted progression rate and a high mean achievement growth. If school K were removed from the data the correlation coefficient would be 0.12. A comparison of achievement growth with progression rates adjusted for both student background and the outcomes of earlier school achievement is also positive with a coefficient of 0.42 (0.38 if School K were excluded).

It can be inferred from these data that achievement growth is not lower in schools which retain more of the students to the end of secondary school (that would be indicated by a negative correlation coefficient). The pattern of association is scattered but, if anything, there is a general tendency for higher achievement growth in those schools which hold more students through to the final year of secondary school. School K displays a picture of high achievement growth and strong holding power and School V shows low achievement growth and low holding power. It was noted in a previous section of the paper that School K had reviewed its curriculum and organisation and emphasised the engagement of students in the learning process. In contrast School V was one of a group of schools which did nothing very special and was content to fulfill requirements rather than seek better ways of doing things. School D recorded relatively high levels of achievement growth at the expense of retaining few students through to the final year of school. It was described in a previous section of the paper as a school where students in the middle secondary years had unfavourable attititudes to school and low aspirations. It appears to be a school which does well for the minority of students who continue to the final year but does little to provide for a wider range of potential students. School E retains a high percentage of its students to the final year but with low levels of achievement growth.

In general the degree of association between holding power and achievement growth is such as to warrant caution regarding any attempt to characterize high school effectiveness as unidimensional in practice.

Figure 1. Progression Rates To Year 12 and Mean Achievment Scores

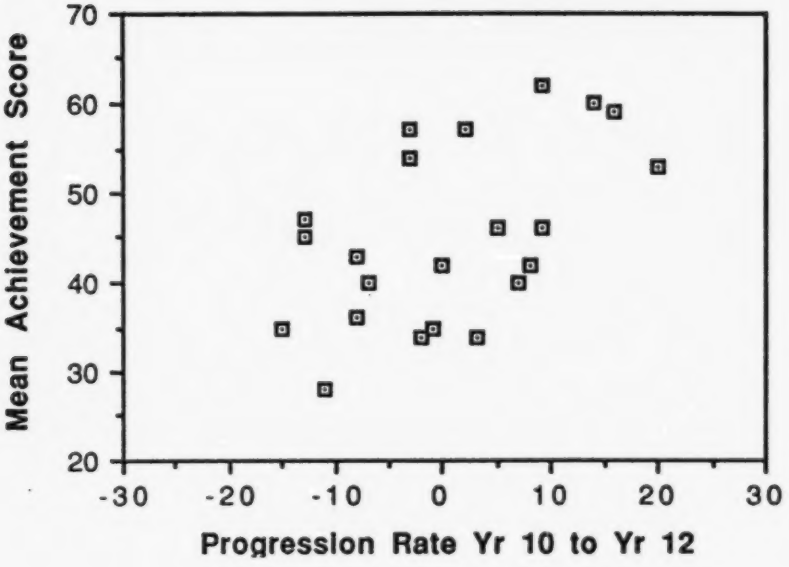
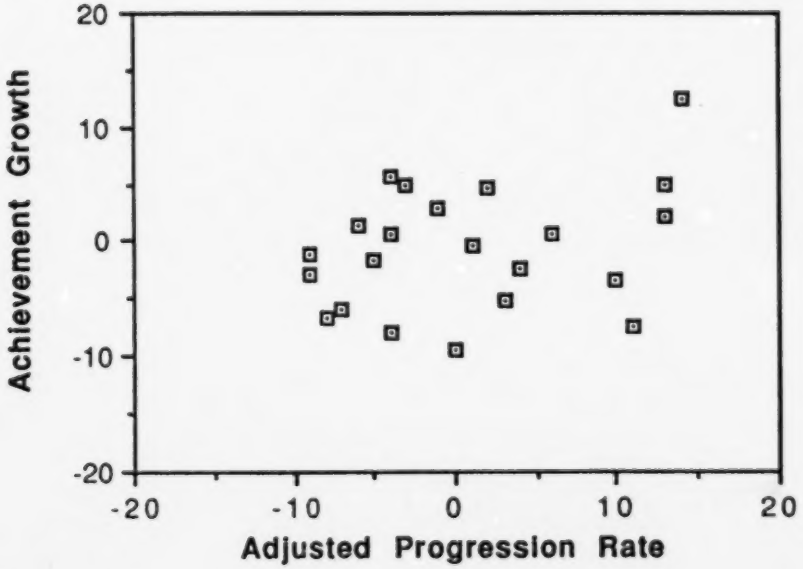


Figure 2. Adjusted Progression Rates to Year 12 and Achievement Growth



IN CONCLUSION

The environment of the 1980s has seen an emphasis on the value to young people of completing secondary education. However, progressing from the middle to the senior secondary years is still associated with student background, the outcomes of earlier schooling and school environments. Some schools retain a higher percentage of students to the senior years than others; even after allowing for differences in the social background of their students. In this context school holding power has become an additional indicator of school effectiveness.

Patterns of school holding power to Year 11 (the first postcompulsory year) in New South Wales suggest that high levels of progression to that stage are associated with one of two paths; a wider curriculum based on alternative programs and high earlier school achievement. Low levels of progression are associated with problems in earlier school years leading to either low achievement levels or unfavourable attitudes to school and low aspirations. These effects appeared to have roots in school policy and practice. Not all schools which successfully retain students to Year 11, hold them to Year 12. The effects of alternative programs do not appear to flow on to Year 12 whereas the effects of high levels of achievement, and high levels of aspirations, in the middle secondary years do carry through. Schools with low completion rates appear to be those which aim to simply meet system requirements rather than pursue broader goals.

There is no evidence in these data that retaining more students to the end of secondary school has deleterious consequences for the extent of achievement growth over the senior secondary years. Indeed, there is a modest positive association between a higher than expected progression to Year 12 and high levels of growth in achievement. One of the schools in this sample provides an indication that both staying at school and learning (as reflected in achievement growth) can be promoted by school practices which nurture engagement in learning and positive attitudes to school. That suggestion warrants further examination. In general the data suggest that school holding power and achievement growth need to be treated as separate indicators of effectiveness in secondary schools.

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